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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,429	03/31/2004	Richard Hsiao	HIT1P041B/SJ0920010089US3	7633
50535	7590	11/28/2006	EXAMINER	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			TUGBANG, ANTHONY D	
			ART UNIT	PAPER NUMBER
			3729	
DATE MAILED: 11/28/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,429

Applicant(s)

HSIAO ET AL.

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 and 20-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of Group I, Species A, Claims 1 through 6 and 10 through 19, in the reply filed on September 12, 2006 is acknowledged.
2. Claims 7 through 9 and 20 through 24 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 12, 2006.

Priority

3. While the specification (on page 1) does reference parent application serial no. 10,115,414, this reference does not include the current status, i.e. that the application had matured into U.S. Patent 6,901,653. The specification should be amended to include the current status of the parent application.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method for Manufacturing a Magnetic Head Coil Structure.

Claim Rejections - 35 USC § 112

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5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations of each of Claims 14 and 15 are redundant with Claim 1. Claim 14 repeats the limitations of Claim 1 (at line 11) and Claim 15 repeats the limitations of Claim 1 (at lines 12-13). Are Claims 14 and 15 really even needed?

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant(s) Admitted Prior Art, referred to hereinafter as the AAPA, in view of Wei et al 6,614,677.

The AAPA (specification, pages 1-3 and Prior Art Figures 1 and 2) discloses a process of making a pole or coil structure comprising: depositing a conductive layer (e.g. 106) of Cu; depositing a photoresist layer (e.g. 108) on the conductive layer; forming a channel in the photoresist layer; and filling the channel with a conductive material (e.g. 110, 111) to define a coil structure.

The AAPA does not teach depositing a silicon dielectric layer on the photoresist layer; masking the silicon dielectric layer; and etching at least one channel in both the photoresist layer and the silicon dielectric layer.

Wei discloses a patterning process that includes depositing a silicon dielectric layer (e.g. 64); masking the silicon dielectric layer (with mask 65); and etching at least one channel in the photoresist layer and the silicon dielectric layer (see sequence of Figs. 7 to 8). The patterning process of Wei is to provide the channel to fill the channel with a conductive material (e.g. 423).

It is noted that both the AAPA and Wei teach art recognized equivalent processes of forming at least one channel to pattern and fill it with a conductive material.

Regarding Claim(s) 19, Wei further teaches that the conductive material can be one of a magnetic material, or a magnetic pole P2 tip structure (col. 4, lines 7-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of the AAPA by including the patterning process of Wei, to perform an art recognized equivalent process of filling a channel with conductive material to provide a patterned conductive material.

9. Claims 1, 3 through 6 and 10 through 17, are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the AAPA, Wei et al, and Sasaki 6,195,872.

The AAPA (specification, pages 1-3 and Prior Art Figures 1 and 2) discloses a process of making a pole or coil structure comprising: depositing a conductive layer (e.g. 106) of Cu; depositing a photoresist layer (e.g. 108) on the conductive layer; forming a channel in the photoresist layer; and filling the channel with a conductive material (e.g. 110, 111) to define a coil structure.

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On a molecular level, one molecule of the conductive material of the AAPA would be less than half of a smallest dimension of the at least one channel. Therefore, the AAPA inherently meets “wherein...on channel” (last 2 lines of Claim 1 and Claim 15)

The AAPA does not teach depositing a silicon dielectric layer on the photoresist layer; masking the silicon dielectric layer; and etching at least one channel in both the photoresist layer and the silicon dielectric layer. Furthermore, the AAPA does not mention that the aspect ratio of at least one channel is about 7.

Wei discloses a patterning process that includes depositing a silicon dielectric layer (e.g. 64); masking the silicon dielectric layer (with mask 65); and etching at least one channel in the photoresist layer and the silicon dielectric layer (see sequence of Figs. 7 to 8). The patterning process of Wei is to provide the channel to fill the channel with a conductive material (e.g. 423).

It is noted that both the AAPA and Wei teach art recognized equivalent processes of forming at least one channel to pattern and fill it with a conductive material.

Regarding Claim(s) 6, Wei further teaches RIE (col. 3, lines 54+).

Regarding Claim(s) 10, 11, 12 and 13, Wei further teaches that the conductive layer (e.g. 13) and the conductive material (e.g. 423) can be a magnetic material of CoNiFe (col. 4, lines 8-11) and where the conductive material (e.g. 423) is a magnetic P2 pole tip structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of the AAPA by including the patterning process of Wei, to perform an art recognized equivalent process of filling a channel with conductive material and to provide a patterned conductive material.

Sasaki shows a coil forming process that provides one channel (e.g. 38 in Fig. 13A) with respect to a ratio of at least 8 channels to form one coil structure (e.g. 40), thereby having an aspect ratio of 8.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of the AAPA by including an aspect ratio of channels of at least about 8, as taught by Sasaki, to positively for a coil structure within a magnetic head.

Regarding Claim(s) 5 and 17 and the selection of materials for silicon dielectric material and the conductive layer, it would have been an obvious matter of design choice to choose any desired silicon dielectric layer material or conductive layer material, since applicant(s) have not disclosed that the claimed SiO_2 for the silicon dielectric layer and Si-containing material for the conductive layer, solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the material compositions of the silicon dielectric layer and the conductive layer taught by Wei et al. Furthermore, the silicon dielectric layer and the conductive layer of Wei is utilized for the very same purpose as the applicant(s), which is to at least provide for the patterning and filling of the conductive material.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

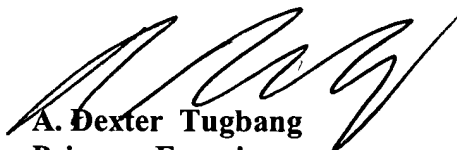
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570.

The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



A. Dexter Tugbang
Primary Examiner
Art Unit 3729

November 21, 2006